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TWO NEW TAXA OF *MARCGRAVIASTRUM* (MARCGRAVIACEAE) AND A CATALOGUE OF COLOMBIAN TAXA OF THIS GENUS[1]

Dos nuevos taxones de *Marcgraviastrum* (Marcgraviaceae) y catálogo de las especies colombianas del género

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ABSTRACT
A new species of *Marcgraviastrum* is validated, described, and illustrated. The new species is known only from the Colombian Guayana (Departments of Caquetá, Guaviare, and Vaupés). Its morphological relationships are discussed. Furthermore, a new combination into *Marcgraviastrum* is published. A checklist of the nine Colombian species of the genus is presented.

Key words. Colombian Flora, Neotropical Flora, Marcgraviaceae, *Marcgraviastrum*, *Norantea*.

RESUMEN
Se valida, describe e ilustra una nueva especie de *Marcgraviastrum*. La nueva especie sólo se conoce de la Guayana colombiana (departamentos de Caquetá, Guavire y Vaupés). Se discuten sus relaciones morfológicas. Adicionalmente, se publica una nueva combinación en el género *Marcgraviastrum*. Se incluye el catálogo de las nueve especies del género presentes en Colombia.

Palabras clave. Flora neotropical, Flora de Colombia, Marcgraviaceae, *Marcgraviastrum*, *Norantea*.

INTRODUCTION

When the U.S. American Hollis Gail Bedell presented her comprehensive thesis on the *Norantea* complex (Marcgraviaceae) in 1985, she unfortunately did not validate her new taxa therein (explicitly stated on page ii). The Dutch botanist Adrianus Cornelis de Roon had studied Marcgraviaceae earlier for his Ph.D. thesis (1975) but had agreed with Bedell to share authorship of his new findings in the complex genus *Norantea* and gave his notes for use in her work. She elevated the subgenera to generic rank and generated thourough descriptions of all species. Consequently, new taxa were assigned with the authorship de Roon & Bedell in her thesis but only one new combination, *Schwartzia spiciflora* (A.

[1] This article is dedicated to Dr. Adrian Cornelis de Roon (Nationaal Herbarium Nederland, Utrecht, The Netherlands) (on the occasion of his death on 2011).

L. Juss.) Bedell, was validated by herself thereafter (Bedell 1989). All other names remained unpublished. Before validating some generic names in 1997 (de Roon & Dressler 1997) the authors had invited Bedell to take part in this publication with no success.

Over the years a considerable number of these names have been validated (Pool 1993, de Roon & Dressler 1997, 1999, Dressler 1999, Giraldo-Cañas 2002a, de Roon & Giraldo-Cañas 2006). Furthermore, a number of taxa in the genus *Schwartzia* have been published under different names [e.g. ***Schwartzia lozaniana* Gir.-Cañas** = *Schwartzia venusta* de Roon & Bedell (ined.), ***Schwartzia chocoensis* Gir.-Cañas** = *Schwartzia foreroi* de Roon & Bedell (ined.), ***Schwartzia antioquensis* Gir.-Cañas** = *Schwartzia sclerophylla* de Roon & Bedell (ined.), ***Schwartzia renvoizei* Gir.-Cañas** = *Schwartzia micradenia* de Roon & Bedell (ined.)] (Giraldo-Cañas 2001a, 2001b, 2002a, 2002b, 2003, 2004, 2005).

Two of de Roon & Bedell´s names are still invalid. One species requires combination into the genus *Marcgraviastrum* and one new species needs to be properly described. Its name was already used in a publication (Cárdenas López *et al.* 2008: 84, 135 incl. photo). In order to end this unfortunate situation these taxonomic novelties are validated here.

Marcgraviastrum (Wittm. ex Szyszyl.) de Roon & S. Dressler is a small genus of the Neotropical family Marcgraviaceae comprising 15 species distributed in wet lowland forests or montane rain and cloud forests in Central (Nicaragua to Panama) and South America (Colombia, Venezuela, Guianas, Ecuador, Peru, Bolivia, and Brazil) (Dressler 2004a, Giraldo-Cañas 2011). The different species of *Marcgraviastrum* are sprawling epiphytic, hemi-epiphytic or terrestrial shrubs and lianas with sessile or petiolate leaves, and the venation is pinnate brochidodromous. The inflorescence in *Marcgraviastrum* is a terminal umbelliformly contracted raceme and this is erect when is in bud and flower, while when the fruits mature may become pendulous in some species. The number of flowers per inflorescence varies from 2-3 to 18-22, and this number is correlated with the size of the flowers; thus, species with large flowers have fewer flowers per inflorescence than those species with small flowers (Bedell 1985).

This genus is easily distinguished from *Norantea* Aubl. and other related genera of the subfamily Noranteoideae by its umbelliformly contracted raceme. This character is shared with *Marcgravia* L., the only genus of subfamily Marcgravioideae, but *Marcgraviastrum* differs from this genus in having 5-merous flowers (4-merous in *Marcgravia*), petals free or variously connate (completely connate into a calyptra in *Marcgravia*), and leaves spirally arranged (distichous in *Marcgravia*). Furthermore, in *Marcgraviastrum* like in the whole subfamily Noranteoideae each pedicel bears a nectary. This is in contrast to the situation in the genus *Marcgravia* where only the central flowers of the inflorescence, which remain sterile and vestigal, develop a nectary. For further characteristics and a key to the genera of the family see Bedell (1985), Dressler (2004a, 2004b, 2008), de Roon & Giraldo-Cañas (2006), and Giraldo-Cañas (2007, 2011).

MATERIALS AND METHODS

This study is based on the examination of herbarium specimens from A, AMES, AAU, B, BM, CAUP, CHOCO, COAH, COL, CR, CUVC, F, GH, HUA, JAUM, K, MA, MEDEL, MEXU, MO, MPU, NY, P, PMA, PSO, S, SI, U, US, VEN, W, and WU [abbreviations according to Holmgren *et al.* (1990)]. The morphological species concept is based on Crisci (1994) and Uribe

Meléndez (2008). The description and the Latin diagnosis are based on Bedell (1985), with some changes made herein.

RESULTS AND DISCUSSION

***Marcgraviastrum elegans* de Roon & Bedell ex Gir.-Cañas & S. Dressler, sp. nov.** TYPE: COLOMBIA. **Vaupés**. Mitú and vicinity; lower Río Kubiyú, savanna, 11 November 1976, *J. L. Zarucchi 2210* (holotype: COL!; isotypes: AMES!, COAH!, MO [not seen, fide Tropicos], US!). **Fig. 1**.

Frutex. Folia elliptico-oblonga (3) 5.8-13,5 cm longa et (1.4) 2.5- 3.5 (4) cm lata, basibus cordatis, apicibus acutis; glandes hypophyllae 2 vel 3, 3-5 mm distantae ex marginibus folii. Axes inflorescentiarum 1-2.5 cm longi; flores (8) 9-15; pedicelli 4-7.5 cm longi et 2-3 mm lati; nectaria sacciformia (1.5) 1.8-2.7 cm longa et (5) 7-9 mm lata, inserta 1.2-1.7 cm ex basibus pedicellorum; stamina 42-48; ovarium 5-locullatum.

Robust and scandent shrubs 2-3 m tall; branches ligneous and subterete with papery, yellowish-red bark on young branches, glabrous and red-brown on mature branches. **Leaves** sessile to subsessile (petiole up to 0.3 cm long), glaucous on both surfaces, dark green above and pale below, producing a long ciliate fracture when broken perpendicular to the midvein; lamina (3) 5.8-13.5 cm long, (1.4) 2.5-3.5 (4) cm wide, elliptic-oblong, basally cordate, apically acute to obtuse through the loss of the mucro, with revolute margins and 2 or 3 small **hypophyllous glands** per side 3-5 mm from the margin and usually only visible with a hand lens; midvein obscure above, subprominent below, the lateral veins obscure on both surfaces or subprominent below. **Inflorescence** axis 1-2.5 cm long with (8) 9-15 flowers on slender pedicels 4-7.5 cm long, 2-3 mm wide; foliaceous bracts 1-3.5 cm long, 0.4-1.4 cm wide, elliptic-oblong, with one pair of hypophyllous glands; **nectariferous bracts** (1.5) 1.8-2.7 cm long, (5) 7-9 mm wide, leathery and reddish-green, saccate, with a revolute or trumpet-shaped margin with an apiculate lip around the slightly constricted orifice, recurved and pendulous, sessile, and attached 1.2-1.7 cm from the base of the pedicel, or, frequently, with the nectaries on the lower two or three pedicels not developing completely but remaining leaf-like and only slightly evaginated. **Flowers** leathery and greenish-white; buds (7) 9-12 mm long; **bracteoles** 4-6 mm long, (4) 5-7 mm wide, suborbicular, appressed to the calyx; **sepals** (4) 5-7 mm long, (5) 6-8 mm wide, orbicular to suborbicular; **petals** (8) 9-14 mm long, (5) 7-8 mm wide, free, oblong; **stamens** 42-48, 9-12 mm long; filaments free, linear; anthers sagittate with yellow pollen; **ovary** 6-8 (9) mm tall, pyriform, 5-locular with 16-20 ovules per locule; **style** 3-4 mm long, cylindrical; **stigma** capitate and somewhat 5-radiate. **Fruit** 1.1-1.8 cm in diameter, red or bright orange, with persistent styles; **seeds** 2.5-4 mm long, 12-16 per locule, reniform, shiny reddish-black.

Etymology. *Elegans*, elegant, fine, referring to the graceful appearance of this species.

Distribution and habitat. *Marcgraviastrum elegans* has only been collected from quartzite or granitic soils ("*lajas*", inselbergs) along the edges of forest or savannas in Caquetá, Guaviare, and Vaupés (Colombian Guayana) (Fig. 2).

Remarks. This species is recognized by its robust habit and unusual leaves that are narrow, elliptic-oblong and basally cordate. It is probably most closely related to *Marcgraviastrum mixtum* (Triana & Planch.) Bedell, from which it is readily distinguished by features given in Table 1.

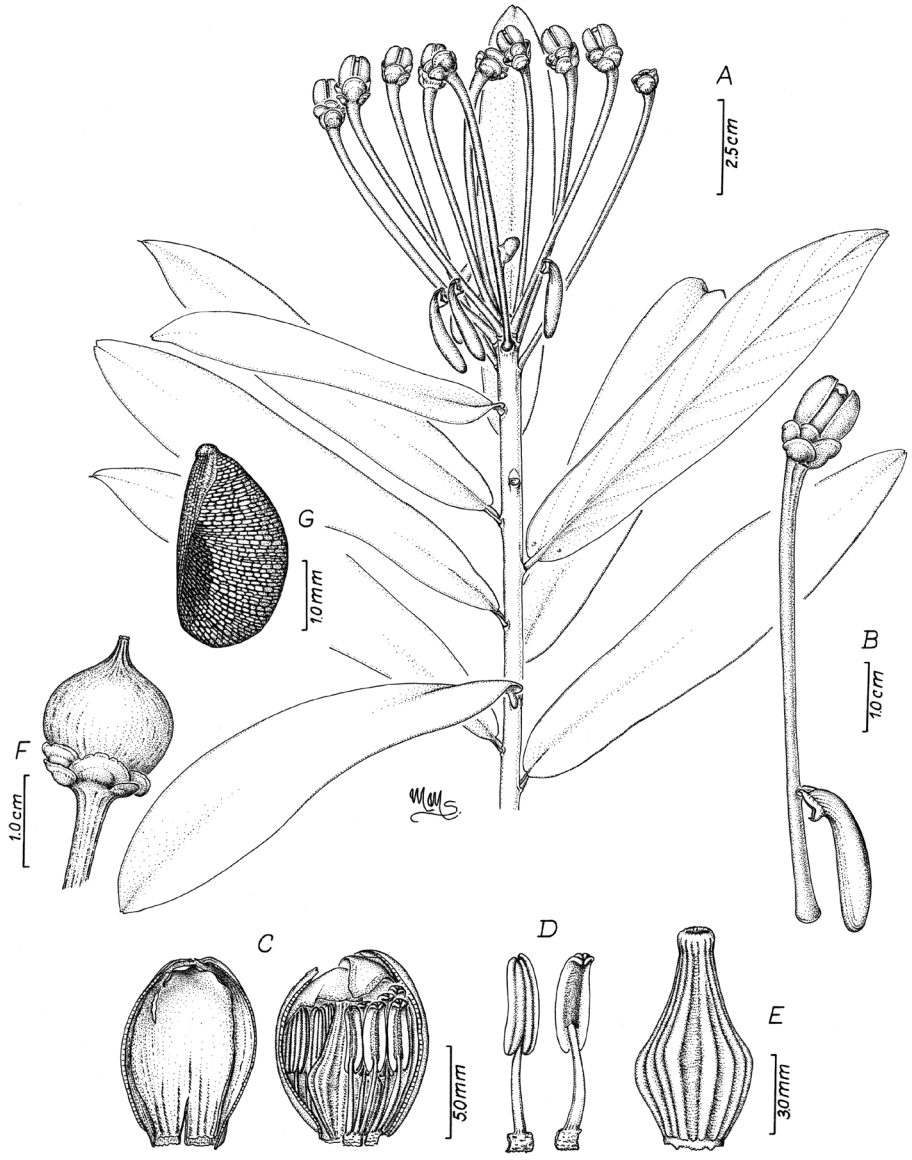

Figure 1. ***Marcgraviastrum elegans*** **de Roon & Bedell ex Gir.-Cañas & S. Dressler**. **A**. Flowering branch, **B**. Flower and nectary, **C**. Petals and stamens, **D**. Stamens, **E**. Ovary, **F**. Fruit, **G**. Seed [A-E from *J. L. Zarucchi 2210* (COL), F-G from *J. L. Zarucchi et al. 1131* (COL)].

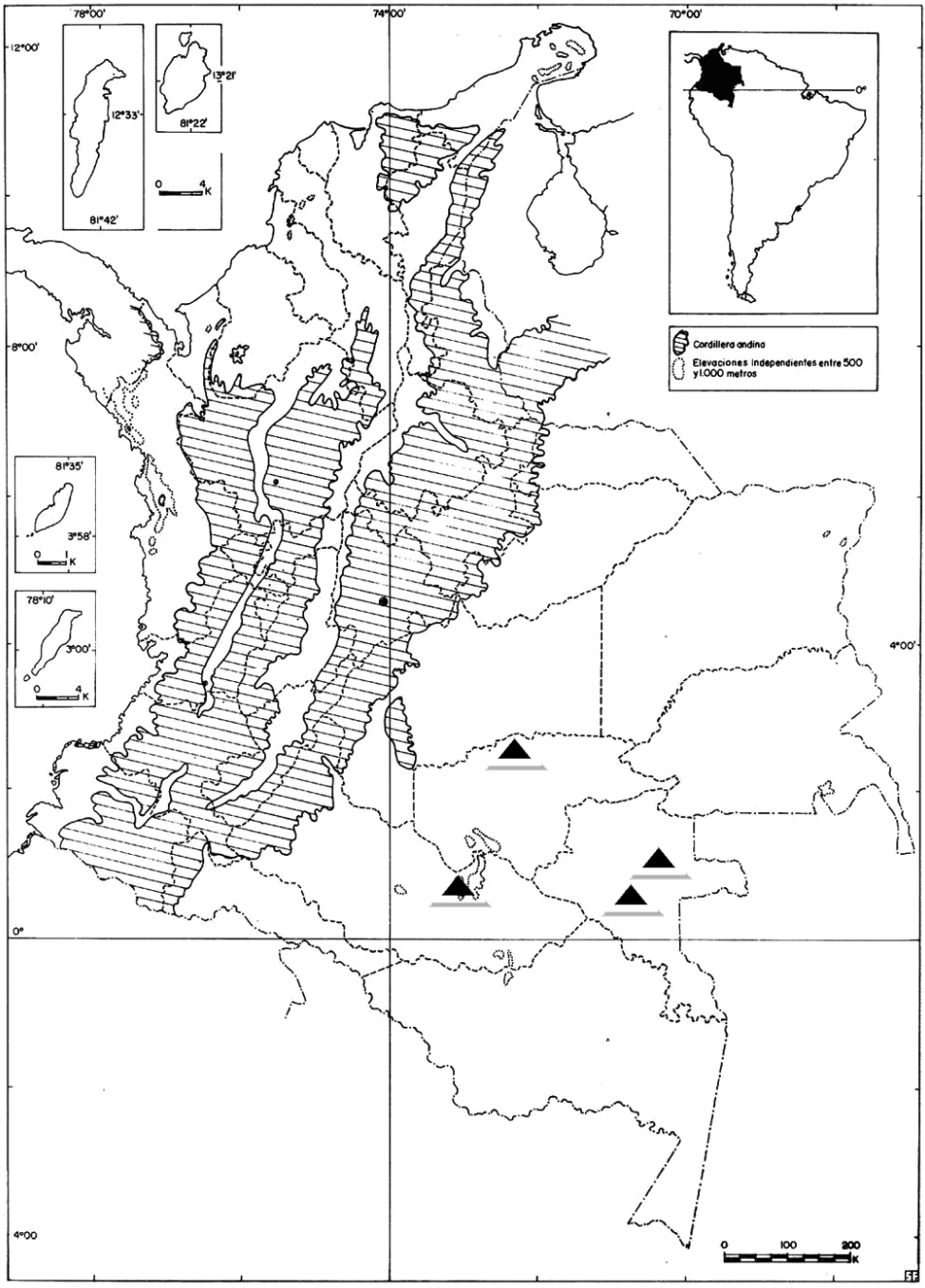

Figure 2. Geographic distribution of *Marcgraviastrum elegans* de Roon & Bedell ex Gir.-Cañas & S. Dressler.

Table 1. Main differences between *Marcgraviastrum elegans* de Roon & Bedell ex Gir.-Cañas & S. Dressler and *Marcgraviastrum mixtum* (Triana & Planch.) Bedell.

	Marcgraviastrum elegans de Roon & Bedell ex Gir.-Cañas & S. Dressler	*Marcgraviastrum mixtum* (Triana & Planch.) Bedell
Leaves	Sessile to subsessile, petiole up to 0.3 cm long	Petiolate, petiole 0.4-1 cm long
Laminas	Elliptic-oblong, basally cordate	Elliptic or obovate, basally obtuse to rounded
Flower number per inflorescence	(8) 9-15	(8) 13-22
Buds	(7) 9-12 mm long	6-8 mm long
Bracteoles	4-6 mm long	3-4 mm long
Sepals	(4) 5-7 mm long	4-6 mm long
Petals	Free, oblong, (8) 9-14 mm long	Free, oblong, 12-14 mm long
Stamens	42-48; 9-12 mm long	40-55; 7-10 mm long
Ovary	Pyriform; 6-8 (9) mm tall	Globose; 3-5 mm tall
Ovules	16-20 per locule	8-14 per locule

Paratypes. COLOMBIA. **Caquetá:** Municipio de Solano, Solano, Estación Puerto Abeja, sector sur-oriental del parque nacional natural Chiribiquete, 19 Nov 1999, *A. M. Eusse* 830 (COAH). **Guaviare**: San José del Guaviare; río Guaviare, sabana y cerros graníticos, *ca.* 270 m, 12 Nov 1939, *J. Cuatrecasas 7685* (COL, US). Mesa La Lindosa, cerrito a 15-20 km al sur de San José del Guaviare, 400-600 m, 13-15 Dec 1950, *J. M. Idrobo & R. E. Schultes 623* (COL, GH, U, US). Municipio de San José del Guaviare, a 20 minutos del casco urbano, en el sitio turístico Los Pozoz Naturales, aguas arriba, en la antigua represa, afloramientos rocosos en sabanas degradadas, 262 m, 27 Mar 1997, *R. López & O. J. Rodríguez 2413* (COAH, COL). Serranía La Lindosa, quebrada Los Pozoz, Feb 2000, *J. Pinzón 95* (COL). San José del Guaviare, antigua represa, sobre roca de arenisca, 200-250 m, 27 Dec 1993, *C. Sastre et al. 9195* (COL, P [not seen]). Municipio de San José del Guaviare, serranía de La Lindosa, afloramiento rocoso, quedraga Agua Bonita entre charco La Lindosa hasta La Reserva, 19 Mar 2008, *D Cárdenas et al. 21335* (COAH). **Vaupés**: Savanna de Yapobodá; near Maloca de Yararaca, Alto Río Cuduyarí, 10 Dec 1943, *P. H. Allen 3227* (COL, MO [not seen], US [not seen]). Municipio de Mitú, sabana de Yapobodá, entre la entrada a la sabana desde el cerro Umukû hasta las cuevas de Umukû, 500-520 m, 19 Mar 2003, *J. Betancur et al. 9971* (COAH, COL). Río Kuduyarí, sabana con arenisca de Yapobodá, *ca*. 350-400 m, 25 Jun 1958, *H. García Barriga et al. 16015* (COL, GH). Caño Cubiyú, comunidad indígena La Sabana, 200 m, 26 Apr 1993, *S. Madriñán et al. 1171* (COL). Municipio de Mitú, río Vaupés, comunidad de Mandi, Oct 1993, *A. Mejía et al. 2713* (COAH, COL). Río Kuduyarí (tributary of Río Vaupés), Yapobodá, quartzite savannah near head waters, *ca*. 300 m, Apr 1953, *R. E. Schultes & I. Cabrera 19986* (U, US). Mitú and vicinity; along lower Río Kubiyú, sandstone savanna, 31 Mar 1975, *J. L. Zarucchi et al. 1131* (AMES, COL); 25 Sep 1975, *J. L. Zarucchi 2141* (AMES, COAH, COL, INPA [not seen]).

A new combination in *Marcgraviastrum*

***Marcgraviastrum obovatum* (G. Don) Bedell ex Gir.-Cañas & S. Dressler, comb. nov.** [in Bedell, H.G., 1985: A generic revision of Marcgraviaceae I, The *Norantea* complex. Ph.D. Diss. (ined.), Univ. Maryland, College Park, MD., p. 370.] ≡ *Norantea obovata* G. Don, Gen.

Syst. 1: 625. 1831. TYPE: Iconotype Ruiz & Pavón, Fl. Peruv. 5: pl. 436 (ined., publ. in E. A. López, Anales Inst. Bot. Cavanilles 16: 393, pl. 436 [p. 443]. 1958). EPITYPE (*hic designatus*): Peru "in silvis Pillao ad Chacahuassi" [Ruiz & Pavón apud E. A. López 1958: 394], *Ruiz & Pavón s.n.*, a. 1787 (Epi: MA, Iso: Bdestr. [F-neg. no. 9707], F-842882, F-843295 [fragm. ex MA], MA; possibly same collection: G [F-neg. no. 23876], GFW, HAL [0021195]).

Catalogue of the genus *Marcgraviastrum* for Colombia

***Marcgraviastrum* (Wittm. ex Szyszyl.) de Roon & S. Dressler:** Nine species in Colombia (two endemic species).

***Marcgraviastrum apaporensis* de Roon & Bedell**
Ref.: *R. E. Schultes 14589* (COL, GH, US).
Region: Amazonia, Guayana (0-500 m)
Departments: Amazonas, Vaupés.
Endemic

***Marcgraviastrum elegans* de Roon & Bedell ex Gir.-Cañas & S. Dressler**
Ref.: *J. L. Zarucchi 2210* (COL, US).
Region: Guayana (0-500 m)
Departments: Caquetá, Guaviare, Vaupés.
Endemic

***Marcgraviastrum gigantophyllum* (Gilg) Bedell ex S. Dressler**
Sin.: *Norantea gigantophylla* Gilg
Ref.: *J. L. Luteyn 10672* (JAUM, NY).
Region: Biogeographic Chocó (0-1500 m)
Departments: Antioquia, Chocó.
Native

***Marcgraviastrum macrocarpum* (G. Don) Bedell ex S. Dressler**
Sin.: *Norantea eoetvoesorum* V. A. Richt., *Norantea macrocarpa* G. Don, *Norantea pardoana* Weberb. & Gilg
Ref.: *D. Giraldo-Cañas 5026* (COL).
Region: Andes (1500-3000 m)
Departments: Cundinamarca, Boyacá, Nariño, Santander.
Native

***Marcgraviastrum mixtum* (Triana & Planch.) Bedell**
Sin.: *Norantea curva* J. F. Macbr., *Norantea mixta* Triana & Planch., *Norantea peduncularis* Poepp. ex Wittm., *Norantea uleana* Pilg.
Ref.: *D. Giraldo-Cañas 3306* (COL).
Region: Amazonia, Andes, Biogeographic Chocó, Cauca Valley, Guayana, Magdalena Valley, Orinoquia (0-2000 m)
Departments: Amazonas, Antioquia, Boyacá, Caquetá, Cauca, Chocó, Cundinamarca, Huila, Meta, Nariño, Putumayo, Quindío, Santander, Tolima, Valle del Cauca, Vaupés.
Native

***Marcgraviastrum pauciflorum* de Roon & Bedell**
Ref.: *A. Gentry 40737* (COL, MO).
Region: Andes, Biogeographic Chocó (0-1000 m)
Departments: Chocó, Valle del Cauca.
Native

***Marcgraviastrum sodiroi* (Gilg) Bedell ex S. Dressler**
Sin.: *Norantea sodiroi* Gilg
Ref.: *D. Giraldo-Cañas 1937-a* (COL).
Region: Andes (500-2500 m)
Departments: Antioquia, Cauca, Nariño, Santander.
Native

***Marcgraviastrum subsessile* (Benth.) Bedell**
Sin.: *Norantea subsessilis* (Benth.) Donn. Sm., *Ruyschia subsessilis* Benth.
Ref.: *E. P. Killip 33217* (COL, MA, NY, US)).
Region: Andes, Biogeographic Chocó (0-1000 m)
Departments: Antioquia, Cauca, Chocó, Nariño, Valle del Cauca.
Native

***Marcgraviastrum vogelii* de Roon & Bedell**

Ref.: *L. E. Mora 4148* (COL).

Region: Andes, Biogeographic Chocó (500-2000 m)

Departments: Chocó, Nariño, Santander, Valle del Cauca.

Native

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